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Ten reviews in this issue are organized under three topics. "Apprenticeship and Other In-Plant Training" reviews registered apprenticeship programs in Wisconsin and a European study of the training of maintenance workers. "Out-of-School Youths and Adults" reviews a case study of a Minnesota technical school, a research study which sought to identify common behavior factors in 84 occupations, and a study of student attributes associated with successful Manpower Development Training Act programs. "Post-Secondary Institutions and Programs" reviews guidelines for hospitality and law enforcement programs, a study comparing the effects of a job-oriented and a field-oriented program in mechanical technology, and a study comparing graduates and dropouts in a California junior college occupational program. In addition, "Plain Talk," a continuing column by the author, discusses the purposes of the column and the role of evaluation. The bibliography lists 20 additional items on the above three topics. (EM)

RESEARCH VISIBILITY

Synthesis / Application / Dissemination

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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POST-SECONDARY AND ADULT EDUCATION

VOCATIONAL EDUCATION is opportunity . . . "Opportunity," not unlike the words "people" and "service," is a key word of the vocationalist. The word is historically linked with the many forms of vocational education legislation and activity which have endured for more than 50 years. As vocational educators have attempted to promote and encourage educational opportunity they have been increasingly sensitive to its availability to *all* Americans. This challenge is becoming increasingly difficult to interpret and implement as vocational educators are confronted with the complex problems of the urban ghetto, the disadvantaged, the isolated, and the underemployed.

The provision and extension of opportunity is not simplified as vocational educators face up to their task in American style. We are zealous of our right to free choice of an occupation, and as educators we are dedicated to the protection of the privilege for all Americans. As the President's Panel of Consultants, the Advisory Council of 1967, and the present Vocational Education Amendments of 1968 affirm and re-affirm, the centrality of purpose in making vocational education continuous opportunity will be a challenge which is never fully achieved. At the moment we may have a noble start. Research, development, application, and dissemination have key roles to play in increasing the many benefits of vocational opportunity to all youths and adults.

Despite their persistent dedication to the provision of opportunity for youths and adults, vocational educators have chosen a "mean row to hoe" in relating the objective to their concerns for "people" and "service." It is possible that only through the medium of research and investigation, together with realistic application and evaluation, can vocational educators truly come to appreciate the dimensions of the task before them. No doubt, this fact is as true and appropriate to the vocational teacher as it is to the program administrator and members of an advisory committee. The challenge is persistent over the entire range of vocational programs, from the pre-vocational through the graduate school.

Vocational and technical education will continue to broaden opportunities for the people it serves as it applies numerous principles from its experiences of the past and employs new techniques which are yet to be acquired. It is the task of research and development, including their widespread dissemination, to sharpen-up and refine the old generalizations and to discover and implement some sorely needed new ones. Vocational and technical education will acquire increasing new meaning and stature as it:

Extends new opportunity through the sharper definition of people-needs, their understanding and participation in the world of work, their access to programs,

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EDITOR'S NOTE

Beginning with this issue, George L. Brandon, professor in residence (Pennsylvania State University) and Research Assistants Gary D. Thomas and Anne Ware have assumed the responsibility of preparing this department of the JOURNAL.

Research Visibility is a research project of the American Vocational Association. The purpose is to give visibility to significant research: experimental, demonstration and pilot programs; upgrading institutes, seminars and workshops; and other leadership development activities for teachers, supervisors and administrators. The *Research Visibility* report synthesizes important projects which have been reviewed, selected and analyzed for their value to vocational, technical and practical arts educators, guidance personnel, and other leaders in education, manpower and related fields. A composite bibliography of significant research and development materials is included.

The project is cooperatively financed by the American Vocational Association and a Vocational Education Act of 1963 grant (OEG 2-7-070633, project 7-0633; "Synthesis and Application of Research Findings in Vocational Education").

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the changing occupational requirements, their commitment to continuing study and growth . . .

Extends new opportunity through program flexibility, the quick change to meet occupational goals, the transferability of skills and knowledge, the courage and professional skill to change curriculums, the versatility to accommodate all students of interest and potential . . .

Extends new opportunity through balance of the program, the fine combination of excellence of scholarship and learning through direct experience, the recognition of the "nice to know" and the priorities of occupational growth and success, the mastery of the tool subjects and understanding of their use, the education of the whole citizen . . .

Extends new opportunity through continuous evaluation of student and program, the assessment of goals and progress towards them, the long-term follow-up of students and program strengths and weaknesses, the formulation of criteria by all concerned, the recording and sharing of educational and occupational data, the publication and dissemination of new techniques and program adjustments.

Traditionally, vocational and technical education programs for post-secondary youths and adults have been the growing edges for new opportunity. Current research and development continue to emphasize the importance of this aspect of vocational education and its relationship to a viable program of occupational education of opportunity for increasing numbers of persons of all ages in the states.

TOPIC ONE: Apprenticeship and other in-plant training

See Bibliography for information on availability of complete studies

"Research in Apprenticeship Training: Proceedings of a Conference," edited by Gerald Somers, Center for Studies in Vocational and Technical Education, The University of Wisconsin, Madison, 1967.

The papers included in this volume were presented at the Research Conference on Apprenticeship Training held in Madison in September 1966, which was co-sponsored by The Office of Manpower Policy, Evaluation, and Research, U.S. Department of Labor, and the Center for Studies in Vocational and Technical Education, The University of Wisconsin. The papers are viewed as important additions to the body of knowledge on the causes, consequences, process, and results of apprenticeship training in the United States.

"Related Instruction: Basic Problems and Issues"

In this report George Strauss, professor of business administration at the University of California, Berkeley, dealt with related instruction as it occurs in the construction, printing and machinist trades where the vast majority of apprenticeship is undertaken. Despite the disadvantages of schoolroom instruction—more expensive, less realistic as compared to on-the-job training, Strauss recommended that the present greater emphasis on schooling represents a healthy trend. For as it becomes more desirable for apprentices to receive a thorough, well-rounded training, the schools must play a larger role in the training process.

A hundred years ago law and medicine were learned on an apprenticeship basis—today these occupations are learned in schools and universities. A few trades now require all apprentices to go through a period of full-time schooling prior to work. Such classes are given in the day time to homogeneous groupings of students. Some arguments against pre-apprenticeship are that the apprentice won't learn much, or what he learns may be impractical; he must serve without pay which may reduce the number of well-qualified applicants; it is feared that such people will go to work for non-union firms; and it is feared that the decision as to who will enter the trade will be made by the education authorities rather than by the labor unions and management.

Despite these objections, Strauss felt that pre-apprenticeship should be encouraged, particularly if the amount of related instruction generally is to be increased. Perhaps trainees could be subsidized by the government, as is done in Canada and through the American MDTA. The question of selection is at least partly resolvable by inviting Joint Apprenticeship Committee members to act as advisers in examining applicants for training. Strauss recommended that before being admitted as a journeyman, an apprentice should be required to pass a comprehensive written and practical test—the prospect of a stiff but realistic exam may itself motivate apprentices to take school more seriously, and it will also help guarantee that graduate apprentices will be competent in all fields of the trade.

"Increasing Apprenticeship Opportunities Through Pre-Employment Training"

John S. McCauley, director, Office of Manpower Training Operations, Bureau of Employment Security, U.S. Department of Labor, reported on pre-employment training in apprenticeable occupations as a promising method of expanding the volume and improving the quality of apprenticeship in the United States. The advantages of such training are manifold: (a) the potential employer is assured that even the beginning apprentice would measure up to a certain standard of competence; (b) a pre-employment course helps a young person to decide whether or not he is really interested in the area, thus cutting down turnover rates in apprenticeship programs; (c) a foundation is provided for acquiring specific skills on the job; (d) minority group members who have taken such a course would have a better chance of scoring high on examinations for admittance to apprenticeship.

Under the Manpower Development and Training Act of 1962 (MDTA), funds may be provided for pre-employment training for prospective apprentices and pay the salaries of instructors and other institutional costs, and training allowances; however, only limited use has been made of this resource throughout the country.

McCauley suggested the following questions as important

subjects for research: How many persons should be provided pre-employment training each year in the various apprenticeable occupations? What should be the duration of pre-employment training in various occupations? Should all trainees who receive pre-employment training be expected to move into formal apprenticeship programs? For what portion of the on-the-job phase of a coupled project should employers be given financial help? How can supportive services best be provided to minority group members who may need special help in entering and completing an apprenticeship? What approach should be taken in communities where sponsors of apprenticeship programs are reluctant to participate in the development of re-employment programs?

"Negro Participation in Apprenticeship Programs"

F. Ray Marshall, professor of economics at the University of Texas, and his associate Vernon M. Briggs, Jr., presented an article based upon their findings from a research project financed by the Office of Manpower Policy, Evaluation, and Research of the Department of Labor. The article represents a summary of a study designed to identify and evaluate approaches and methods to increase Negro participation in selected apprenticeship programs. In addition to reviewing the available literature on the topic, the findings are drawn from extensive personal interviews with officials of the apprenticeship establishment (unions, employers and specialized government agencies dealing with apprenticeship) and with Negro youths who are participating in or who have sought entry into such programs.

Issues such as the perpetuation of discriminatory selection practices, union apprenticeship traditions like nepotism and control over supply considerations, the paucity of actual Negro applicants to programs, and the obstacles facing Negroes in passing written and oral examinations for admission are all reviewed in detail. More than simply indicating the trouble spots, an effort is made to determine the proper weight to be assigned to each of these problem areas. The article concludes with specific public policy recommendations pertaining to the demand for apprentices in general; the role to be assumed by anti-discrimination policies; and the measures needed to increase the supply of qualified Negro applicants.

"A Study of the Registered Apprenticeship Program in Wisconsin," by G. Soundara Rajan, Center for Studies in Vocational and Technical Education, Industrial Relations Institute, The University of Wisconsin, Madison, 1966.

The Wisconsin apprenticeship program is a joint group registered program, with both labor and management participating in the establishment of the terms and conditions under which apprentices may be trained and employed and all employers subscribe to the same set of basic standards. The success or failure of a registered joint apprenticeship program and the extent of its popularity among youths depend on many factors: (a) the degree of organization among employers and journeymen; (b) the general condition of trade standards; (c) the general economic condition of industry as a whole, and of those industries undertaking training in particular; (d) the amount of promotional work done by the agencies involved in the training program; (e) general working conditions and compensation paid to the apprentices; and (f) the nature of the laws on apprentice training in a given area.

There are two primary functions performed by vocational schools in the apprentice scheme: (a) providing related instruction and assisting in the selection of candidates by administering tests, and (b) helping employers and student apprentices to understand apprenticeship. Because related instruction is "the most important segment of training," it is necessary to have a periodic evaluation of subject matter, materials and equipment in order to maintain high standards. In Wisconsin this evaluation is done periodically by the schools themselves in cooperation with school advisory groups that are composed of equal representation of employers and employees and consultants from public agencies as necessary.

Rajan evaluates the apprenticeship program in terms of the objectives of the Wisconsin Apprenticeship Law as stated by the Industrial Commission in 1956: "(a) to assist in the development of better trained workers for the trades, and (b) to act as a protective measure for minors entering the trades."

To protect minors, the following procedural changes were recommended: (a) the field supervisors should contact the apprentice more often than once a year—preferably four times a year at least—in order to insure they are receiving the proper shop supervision; (b) the present practice of interviewing the apprentice in front of his employer should be changed so that the apprentice can discuss his situation freely; (c) field supervisors should have in-service qualifications enabling them to understand the problems which can arise between apprentices and their employers; (d) the field supervisors should have more of the responsibility for the apprentices' welfare, and if there is no joint apprenticeship committee he must accept sole responsibility for the welfare of the apprentice.

The apprenticeship program supplies less than 50 percent of Wisconsin's skilled labor because (a) the number of new registrations is smaller, and (b) the number of cancellations has grown in most trades. Therefore, much greater participation by the employers in the training program must be achieved so that the number of newly indentured may be increased, and the number of dropouts be reduced to a minimum. Labor views the overall objective of the apprenticeship program "to maintain and improve the skilled labor force." The U.S. Department of Labor estimates that each year 2 million newly trained skilled workers are needed; but only a small number of men attain journeyman status every year.

If apprenticeship is to function as a weapon against structural unemployment in Wisconsin the objectives of the program must be restated to include the development of a supply of skilled manpower which will meet the needs of industry and a policy statement that apprenticeship training is "part of an over-all national manpower and training

effort." It must also see that training is dovetailed with industry's technological progress in a manner to produce enough journeymen with the needed skills.

In order to accomplish this the Apprenticeship Division must be changed to allow it to initiate and carry out programs of skill development in cooperation with other State agencies, e.g., employment services and the State Board of Vocational Education, to make the apprenticeship program a meaningful device capable of meeting labor market problems. The Apprenticeship Division must also perform research on problems such as dropouts and apprentice mobility. And, finally, there must be a periodic evaluation of the Apprenticeship Division to see that it is fulfilling its goals, and that the goals have a current relevance.

Rajan has made some proposals for further research in this area. Because of the voluntary nature of the program, there is a need for a study of the role played by the local and/or area joint apprenticeship committees and the extent to which they participate in the selection of apprentices, their effectiveness in different trades, and their role as the local guardians of the apprentice in training. Because employers are reluctant to have apprentices because they fear they will desert them after training and seek employment in bigger companies, there should be a study of the apprentice mobility in Wisconsin to help settle the validity of this claim.

"Training of Maintenance Workers," by Sven Grabe, International Labour Office, Geneva, 1967, prepared for the Manpower Administration, Office of Manpower Policy, Evaluation and Research, U.S. Department of Labor.

This is a study of the problems of recruitment, training and adaptation of maintenance workers for highly mechanized or automated industries other than mechanical and electrical engineering. The main objective was to determine the principal trends and requirements of in-plant training for skilled workers engaged in machine setting, repair and maintenance operations in certain branches of industry in which production had undergone substantial changes during the past ten years. It was based on the assumption that in a period of accelerated technical change, recruitment and training of maintenance workers would be a major management problem, particularly in those industries other than mechanical and electrical engineering which are not equipped to provide complete in-plant training for such craftsmen.

Emphasis was placed on the chemical and food processing industries in four countries: Belgium, France, West Germany, and Sweden. Personnel records were studied, and practices and shortage situations were explored in discussion with manpower authorities, employers' organizations, training specialists and management staff, and this information was compared with two research projects relating to changes in recruitment and training in the iron and steel industry carried out by the International Vocational Training Information and Research Centre (CIRF) of the International Labour Office (ILO). Despite the general labor shortage, and contrary to what has been previously written, this study did not find that it had been particularly difficult in the past ten years for an industry to recruit a sufficient number of maintenance men or to adapt the knowledge and skill of existing staff to the new requirements of automated processes and installation of new machinery.

Total numbers of maintenance staff had remained stable or increased slowly with spectacular increases occurring in only a few cases; for example (a) when newly designed processes and equipment had been introduced, and (b) when the maintenance function had been expanded to include the design of new equipment.

The level of qualification of maintenance men was rising; workers without recognized qualifications as journeymen were no longer being recruited for maintenance; foremen previously promoted from the ranks were now being replaced by technicians trained in technical institutes. The existing staff at technician and worker levels had in many cases received in-service training organized by their employers, technical schools or new equipment suppliers. Most of the maintenance men had picked up much of what they knew about new equipment and processes from working on the installation of new machines and instruments alongside the suppliers' assembly-men and instructors.

In none of the companies had a shortage of maintenance staff been an obstacle to the introduction of technical change or new equipment. Vocational schools in Belgium, France and Sweden and the industrial and artisan apprenticeship systems in West Germany had been turning out a sufficient number of trained mechanics and electricians to meet their needs.

The establishment of specialized maintenance trades was not entirely successful. Relatively few trainees applied for courses in such trades, and industry had reacted with hesitation despite the fact that demands for national recognition of such trades had been initiated by representatives of industry. The average European trainee (15-16 years old or younger in his first year of training) was considered too young to specialize in maintenance work during the three to four year period of training for newly recognized qualifications as a skilled mechanic, fitter, electrician, or machinist.

With few exceptions the employers preferred the training of maintenance men be carried out in three phases: (a) training at school, in industry, or in the artisan trades to journeyman level as a mechanic or electrician, (b) practical experience as a trainee in a maintenance department under a system of planned rotation to different types of work designed to give him a full understanding of the production processes; and (c) courses of further training and updating to broaden the skill and knowledge acquired in the first two phases, including techniques of fault detection and training directed to breaking down the limitations of traditional borderlines between trades, e.g. training mechanics in electrical work and electronics.

Problems in recruitment of necessary skills connected with the changeover to automation occurred in the early 1950s and were solved mainly by organizing special training and retraining courses for employees. Long-term investments in training equipment and facilities were profitable

only to the larger employers who recruited many craftsmen each year. Adaptation of new recruits cause a problem only when the annual rate of recruitment exceeded 10 to 20 percent of the existing maintenance force; otherwise, the new men were successfully trained alongside experienced journeymen.

These observations appear valid for the chemical and food industries. The vocational schools had been turning out an increasing number of mechanics and electricians trained to journeyman standards in three of the countries; German industry had increased the number of journeyman mechanics trained in apprenticeship from 1950-59; since then the number of new apprentices had decreased in these trades. The number of electricians trained, on the other hand, had increased over the period 1959-65. In addition, the artisan trades in all four countries had been training more mechanics and electricians than they needed and many journeymen trained in artisan workshops had taken up work as mechanics or electricians in industrial areas.

From observations made in the European Coal and Steel Community iron and steel industries, it was evident that radical changes in the handling of materials and in production methods required substantial changes in the training action of the employers.

The results obtained in the present study would seem to show that the problem of recruiting and training maintenance men must be assessed specifically for each country, for each major branch of industry, and at frequent intervals, as the conditions which are at the root of such problems are in themselves rapidly changing in all the countries. But the nature of this change is not the same in all industries, nor are conditions similar in all countries.

TOPIC TWO: Out-of-school youths and adults

See Bibliography for information on availability of complete studies

"The Role of Technical Schools in Improving the Skills and Earning Capacity of Rural Manpower: A Case Study," by Svetozar Pejovich and William Sullivan, St. Mary's College, Winona, Minnesota. 1966.

The Manpower Development and Training Act of 1962 was an attempt to upgrade national manpower resources and alleviate unemployment. In many cases the MDTA programs have been administered through area technical schools. This report is an attempt to (a) calculate the private and social gains from investment in technical schools, and (b) spotlight the advantages to inadequately skilled labor in rural areas afforded by investment in retraining and skill development.

A series of statistical formulas were developed and tested on questionnaire data supplied by graduates and students of the Winona Area Technical School in Minnesota. Details of their methods, findings and conclusions are presented.

Formulas were developed to provide information in relation to the following:

1. The private costs of investment
2. The annual return on investment.
3. The private rate of return on the investment.
4. The social costs of investment.
5. The social returns on the investment.
6. The social rate of return on the investment.

Graduates and students who were presently enrolled in the school were utilized in the study. In the case of the enrolled students, the Minnesota State Employment Office was asked to estimate their expected average earnings. Returns were also computed for individual programs.

The authors conclude that an individual must place considerable weight on his own ability and situation and hope for the best. They also conclude that in the most profitable industries and during the most prosperous times, some individual investment decisions are bound to fail. It was reported that, for the most part, the school successfully performed at least two functions for its students. First, it has enabled inadequately skilled men and women to improve their earning power; secondly, the school may provide these men and women with a greater sense of purpose and accomplishment. The general conclusion was that the rate of return, both public and private, was equal to or greater than the use of the same resources elsewhere. It was significant that approximately 80 percent of the graduates remained in the area.

"The Identification of Common Behavioral Factors as Bases for Pre-entry Preparation of Workers for Gainful Employment," by Douglas Sjogren, Wayne Schroeder, and Robert Sahl, Colorado State University, Fort Collins, Colorado, University of Nebraska, Lincoln, Nebraska, 1967.

The basic assumption of this research study was that vocational curricula designed to teach skills, knowledge and understandings relevant to a number of jobs followed by specific training for a single job are more efficient and effective than vocational curricula designed to teach certain specific jobs. The central problem of this study was to determine whether behavioral factors might be identified which would serve as bases for the development of curricula designed to prepare persons for initial entry into the labor force at the semiskilled, skilled or technical levels of employment.

Methodology

The data were collected by interviewing job incumbents in the agricultural and metal working industries. A list of 84 occupations at the semiskilled, skilled and technical levels was developed, and five incumbents in each occupation were interviewed in Colorado and Nebraska. The interviewers were students and housewives who were given a three-day training program in interviewing principles. During the interview, interviewers had a copy of the instrument and the scale description; the incumbent had a copy of the scale description.

The incumbent would respond verbally to each item and also give a rating for each item; the interviewer would

compare the two responses, and if they were incompatible the interviewer and the incumbent would discuss it and attempt to reach an agreement on the appropriate rating; if they could not agree a final decision was made by the project director (there were few such cases). The complexity scale was post-coded by one person, a graduate student in industrial psychology, on the basis of the description of the behavior on the instrument.

Summary and Conclusions

The interview schedule contained several general work environment items, and clerical, physical activities, personal contact, and supervision-level checklists. The five major behavioral dimensions—physical, discrimination, intellectual, responsibility and decision-making, and communication behaviors—were characterized by 42 items. For example, under physical behavior one of the items measured was finger manipulation; under discrimination behavior, speed estimation; under intellectual behavior, math usage; under responsibility and decision making, ability to formulate policies and goals; and under communication behavior, persuasive communication. The analysis of the correlation matrix of the 47 agriculture occupations yielded three factors, or occupational clusters, which were characterized by high loadings of production agriculture, agricultural industry and agri-business occupations. Behaviors that characterized a cluster were identified from a tally made of the number of occupations in a cluster that scored above or below the mean of the occupations on each variable.

Using this procedure, the production agriculture cluster was characterized by an average or high level on almost all the behaviors, with the highest on intellectual, responsibility and decision-making behaviors. Highest scores for agricultural industry were machine operation behaviors. Occupations in the agri-business cluster generally scored at a high level on intellectual responsibility and decision-making and communicative behaviors, and low on physical and discriminative behaviors. There were also three factors in the metal working occupations—skilled worker, semiskilled worker and business clusters. Clusters for skilled and semiskilled workers were similar except that the skilled workers scored at a higher level. The highest scores were mostly on physical and discriminative behavior items; the scores were overall low when compared to other occupations. The business cluster scores were similar to those in the agri-business cluster.

Four general factors emerged from the total grouping—industrial worker, business, production agriculture, and technical or skilled clusters. The industry cluster occupations scored at a low average or low level on most of the items; the highest scores for this cluster were for physical and discriminative behaviors and those behaviors associated with knowledge of machines. The occupations in this cluster primarily were from the agriculture industry and semiskilled metal worker clusters. The business cluster was composed of occupations from the business factors previously identified; the scores here were highest on the communication, intellectual, and responsibility and decision-making behaviors. The production agriculture cluster was almost identical with the production agriculture cluster in the agricultural analysis; the highest scores were on the intellectual and responsibility and decision-making behaviors. The occupations in the skilled or technical worker cluster scored high on behaviors associated with the more independent types of work situations; there was a considerably higher level of scores on most behaviors than those in the industrial occupations; there were notably low scores, however, on some items such as policy making, knowledge of business procedures, and the communication behaviors.

A comparison of the clusters obtained by analysis of interview responses and those based on judgment indicated that in agriculture the clusters obtained from analysis of the instrument were different from those based on judgments of similarity by vocational agriculture teachers. The instrument yielded clusters based on job behaviors while it appeared the teachers were discriminating among the jobs on the basis of product knowledge. A comparison of the two methods in the metal working occupations indicated the clusters based on instrument analysis were similar to those based on judgments of similarity made by T&I teachers.

It was felt that the project returns offered some curricular implications. The occupational clusters identified were reasonable and the scoring patterns of the occupations suggested different emphases that could be provided for in a curriculum for the clusters. The results of the study did little to resolve the controversy in vocational education regarding the curriculum for agriculture-related occupations. There emerged two definite clusters of ag-related occupations which were distinct from the production agriculture cluster. The production agriculture cluster score pattern was such that a curriculum designed to provide comprehensive work would seemingly cover well the behaviors in the other clusters.

However, the ag industry and agri-business occupations exhibited more commonality with industrial and business occupations in the metal working industry than with the production agriculture occupations. There is more evidence needed on this question. The behaviors in this study didn't cover all the knowledge and understanding that might serve to cluster or differentiate occupations; the study results did suggest that a curriculum for training for placement in ag industry and agri-business occupations might well utilize a team teaching approach.

"Retraining Under the Manpower Development Training Act: A Study of Attributes of Trainees Associated With Successful Retraining," by Sigmund Nosow, Ph.D., School of Labor and Industrial Relations, Michigan State University, East Lansing, Mich. 1968.

These studies deal with some of the sociological, social-psychological and psychological characteristics of persons who have entered selected Manpower Development and Training programs in Michigan, and how these characteristics related to particular training outcomes. In order to maximize the returns from retraining, the crucial variables making for a successful program should be isolated so that one can predict with some probability of success which type of individual or group of individuals, and which type of

course or group of courses, will lead to maximum placement of retrainees in jobs for which they become qualified.

Methodology Used in the First Study

The first study was a two-stage panel study in which an initial interview was given to all trainees in the sample during the second week of training. This first interview schedule contained both structured and unstructured questions directed at obtaining the social and social-psychological attributes of the trainees. The criteria of success were program completion and the extent to which a trainee achieved successful labor market placement. All trainees (those who completed the program and those who dropped out) were interviewed three months after the completion of the program. The research group felt that training outcomes cannot be related to given theoretically crucial variables unless the training situation and the labor market in which the person is being trained are held constant.

In Michigan there were wide variations in approaches and structuring of programs which were a function of the setting, instructor and the type of course being offered. The programs are established in theory to meet a need on the part of local employers, but these needs often vanish with the vagaries of the economy—at no point in time is there uniformity in the demand for different classes of workers throughout the country. Because of the difficulty in measuring the quality of the program itself, the researchers used a design which held constant the quality of the program. The programs were representative of given industrial and occupational types—those which were being instituted most broadly around the country: auto mechanics and auto body repair programs—service industries and male occupations; machinists—skilled occupations in manufacturing; practical nurses, essentially a woman's program and of a higher white-collar type; clerk-steno, a skilled and essentially female occupation, and hospital aide-orderly, an unskilled and essentially female occupation in a service industry; computer training, a white-collar occupation at a potentially technical-professional level, essentially defined as a male occupation, was studied for data it might offer *vis-a-vis* the rest of the selected programs.

The study was restricted to programs located in four central cities of Michigan chosen randomly from the ten central cities of the standard metropolitan statistical areas in Michigan. Of the total population 14 years old and over in the labor force in 1960, 74.3 percent was found in these ten cities and of these almost half were in the four central cities; in 1960, 74.8 percent of all unemployed were in these ten cities and 43.0 percent of all the state's unemployed were in the central cities. In 1960, 93.2 percent of the non-white population was found in these ten cities, with 79.6 percent in the central cities. Of all MDTA projects approved for Michigan prior to 1964, approximately two-thirds were from the central cities. By its nature the sample made no attempt to be representative of particular types of courses or communities. Each community's programs represented a separate universe. The conclusions of the study are inferred as being valid for wider generalization, dependent upon general empirical knowledge about similarities with other types of universes.

The research data are based on a sample of 406 trainees found in 22 retraining courses representing seven different types of courses offered in the randomly selected sample of four standard metropolitan statistical areas in Michigan. No two of the cities had the same types of course offerings during this time period, although there was overlapping of course offerings among all four. Restrictions on entry into the training courses were generally based upon some of the aptitude measures in the General Aptitude Test Battery (GATB) with some educational, psychological and moral requirements on the licensed practical nurse courses; age was not a restriction (except for the special youth courses—one of the auto body and one of the machinist courses); education was not restrictive except in the practical nurse and computer program. Past experience in the labor force, amount of unemployment, marital status, number of dependents, geographic mobility, military service, or physical capabilities were apparently not considered as significant variables in the selection procedures, although the criteria applied was generally within the autonomy of the Michigan Employment Security Commission branch office for the area in which the program was established.

The types of courses defined the types of trainees found within them—male trainees in industrial courses and those for service employment traditionally representing male occupations; women trainees in courses such as practical nurse, nurse's aide and office occupations; computer training had primarily male enrollment. Those courses centered in areas with large Negro populations consisted of a larger number of Negro trainees than did those in the other communities. During the period in which the training courses were offered, the rates of unemployment for each of the labor markets were very low, varying from a mean unemployment figure of 3.0 percent to 5.6 percent. Under different labor market conditions the selective factors might lead to a slightly different composition of the trainee group as to social characteristics, abilities and motivations.

The main difference between this sample and the total trainees in institutional MDTA programs for the entire country for 1964 was in the ages and education of the trainees, the Michigan sample was substantially older and had a higher education level. The trainees were not considered characteristic of the entire labor force of Michigan nor were they considered representative of those workers in the various occupations for which they were being trained—they represented a group of workers unemployed or underemployed in a time of very tight labor market conditions. MDTA trainees for the most part had higher levels of education than the total hard core unemployed; many entered programs although they had employment currently available; they had an attitude of willingness to undertake retraining.

Summary of Findings in First Study

Retraining was successful for persons in the sample on both criteria measures—course completion and labor market outcomes: 72.7 percent completed training; 59.6 had

work related to the type of training for which they had been enrolled, and 21.9 percent had other types of employment. The study showed that persons trained for specific jobs who complete training get jobs when there is a demand in the market, and that most persons marginal to the labor force (the youth, aged, poorly educated, nonwhite, and female persons) lose this marginal character when they complete training. Persons who do not complete training retain their marginal character even in a tight labor market. For those who have completed training, factors such as higher education, young adulthood, maleness, and favored ethnic membership give no marked advantage in obtaining the specialized jobs for which retraining has been a preparation.

High dropout rates from the courses were largely a function of emergent job opportunities within the local labor market. The study was based on two broad postulates: (a) workers receiving retraining are better off than those who do not, and (b) workers will vary widely in their abilities to benefit from retraining and will manifest a wide range of training and labor market responses significantly associated with their psychological and social attributes. Two dynamic forces at work underlying retraining are (a) the strength of motivation and aspiration of trainees, and (b) impelling pull of the local labor market opportunities.

Training is of value to all types of persons irrespective of age, education, or past occupational, education or social backgrounds. The higher the education, the greater the opportunities, as manifested by the number of persons in non-training-related employment—but this was true only for white trainees; for nonwhite male trainees different levels of education made relatively little difference in outcomes. There were no differences among races in dropout rates. Comparisons among white trainees show no differences in rates of success between men and women; comparisons among nonwhite trainees show women to be significantly more successful than nonwhite men.

Data on job-changes during the three-month period following the completion of training suggest some short-run mobility patterns for all trainees—one apparently finds the interactive effects of training and normative system of the larger community as reflected in the labor market; while the women held but one job during this period, three-fifths of the males held two or more jobs during this time. The least mobile persons were in the 40 years and over and under 20 age groups. Retraining apparently provided opportunities not open to other non-white persons without successful course completion. Persons with high employment among their friends tended not to enter a retraining program. Past educational and occupational experiences have little influence on training completion successes, although there were some variations in outcomes, for particular program types.

Background education only seemed to make a difference for clerk-steno trainees; those with training were more successful than those without. Adults in the prime of life were not more successful in retraining than were other persons. Trainees with dependent children were not significantly more successful than other trainees. The dropout rates for single persons were not significantly higher than for married persons. Where universalistic criteria prevail, nonwhite trainees are more successful than are white trainees (hospital occupations in this case). Upwardly mobile persons, as judged by family backgrounds, were no more successful in retraining than were other persons. Extent of past unemployment had no influence on training outcomes. Among the most successful trainees were female heads of households, who were significantly more successful than were other groups.

Second Study Provided a Perspective

The second study, based on the original one, was undertaken to provide a type of perspective on retraining by comparing trainees and persons similar in basic social and personality characteristics not receiving retraining. The essential question was, "to what extent does Manpower Development and Training provide social, psychological and economic outcomes for trainees which are not available to persons similarly situated and similar in background who do not have the advantages of such training?"

A total sample of 302 male and female, white and nonwhite subjects (151 MDTA trainees and 151 matched controls) from the four central cities were studied. The control group consisted of individuals who had been accepted for the courses, but for certain reasons did not enter training (e.g., finding new employment, returning to employment from which they had been released, entering other training, family obligations). Matching was made on the basis of the following crucial personal variables: labor market location, interest in the same program, sex, ethnicity, age, education, marital status, GATB scores. There were 151 pairs of initial interviews; due to difficulty in locating many individuals, there were 134 post-training pairs of interviews.

Significant differences emerged between persons who entered MDTA training and those who did not. In job satisfaction and occupational level the trainees had significantly higher results; trainees did not differ from controls in amounts of employment or in wages. However, when trainees who completed the courses are compared to their controls the differences between the total groups become clearer. The successful trainee has higher occupational status and more job satisfaction than his counterpart among the controls; the successful trainee also has lower wages than his counterpart among the controls. There are few differences between unsuccessful trainees and their controls. (Dropping out is perhaps less a function of ability, especially for males, than of the pull of the labor market.)

Research Visibility since September 1967, is indebted to the efforts of C. Thomas Olivo, Temple University, and Gordon F. Law, Rutgers University, for 11 issues. Responsibility for preparation of this section has now been assumed by George L. Brandon, professor in residence (Pennsylvania State University) and Research Assistants Gary D. Thomas and Anne Ware.

"Guidelines for Hospitality Education in Junior Colleges: A Manual for the Establishment of Programs for Careers in the Hotel-Motel, Restaurant, and Institutional Industries," by Richard L. Almarode, American Association of Junior Colleges, Washington, D.C. 1967.

These guidelines provide advice for the establishment of hotel-motel, restaurant, and institutional educational programs. It has been estimated that each year until 1977 an additional 250,000 new workers will be needed in the food service industry. The hospitality industry is undergoing a major transition period, evidenced by the growth of expressway and downtown motor hotels replacing downtown hotels and roadside tourist courts. The convention and group business market has been expanding; air transportation and rapidly expanding interstate systems have created a demand for many new public hospitality accommodations; institutional housing for students, aged, convalescents, retired persons have increased; and the potential hospitality market has hardly been tapped. All areas of the hospitality industry need qualified and trained employees.

At the community college the program of instruction should be a flexible one that meets the needs of the students, as well as the needs of the hospitality industry in the community. It should contain the following student objectives: (a) the acquisition of competencies which will enable students to enter into the hospitality industry; (b) provisions for skills, including on-the-job experience, for entry to supervisory type jobs; (c) instruction that will enable them to advance to higher positions through improved skills, attitudes and information; and (d) the college should also offer community service programs of enrichment and inspiration to all areas of employed personnel in the hospitality industry, specifically patterned to meet the day-to-day needs of the industry and community.

The community junior college should survey the industry to obtain the following information: employment statistics of the area, knowledge of job opportunities for graduates, opportunities for cooperative work experience, identification of part-time teachers, guest lecturers; identification of potential members of an industry advisory committee; an indication of the number of potential part-time or full-time students already employed in the industry who need or desire additional occupational education; and identification of curriculum needs. This survey should be comprehensive, including not only trade associations but several industry members and agencies of the state government.

The industry advisory committee is recognized by the U.S. Office of Education, the American Vocational Association, the American Association of Junior Colleges, and state departments of education as being essential to an efficient and effective occupational education program. Selection and operation of such a committee is described in this guide, with an emphasis on close coordination with the community college.

Since selection of the department head or director of the program is a determinant of the ultimate growth, development and success of the program, he should have a part in as much of the organization of the program as possible. He should be selected as soon as possible, keeping the following suggested qualifications in mind: possession of a bachelor's degree in hotel-motel, restaurant and institutional field with a master's or equivalent preferred; occupational experience in the industry; desirable personal traits. The faculty must be competent in their subject areas.

Suggested Curriculum Patterns

This guide deals with degree programs, certificate programs, continuing education programs, and community service programs. The certificate program may be considered to fill a need of the industry for specialized training—it is a combination of credit courses requiring less than two years for their completion, focusing on a limited range of skills and training for specific parts of the industry; a certificate of competency is usually awarded upon completion of the program. Some areas of the industry that should be considered in this area are sales promotion, baking, specialized cooking, data processing, purchasing, and fast-food merchandising. The program should be open-minded, allowing the student to continue his education. A sample of a 37½ unit certificate program is printed at bottom of this page.

Facilities Planning

Space and facility planning should parallel curriculum planning; if cooperative work experience is used classroom facilities would be at a minimum. However, if the junior college is used for laboratory experience special consideration should be given in the initial developing stages to space and facilities. Some colleges have converted a classroom into a typical motel or hotel front office, and a few have even successfully operated a college motel, hotel or food service operation. Opponents of this approach to

BAKING

Major Courses	
Baking: hotel. restaurant, and retail	9
Baking: hotel, restaurant, and retail laboratory	18
Sanitation	1
Introduction to food preparation and services	2
	30

Related Courses	
Health education	1
	1
Other Courses	
Physical Education	1½
Electives	5
	6½

training say that more emphasis is on the physical operation of the training facility than on the training itself.

In planning a food production laboratory, if space requirements are kept in mind, this can be combined with the college cafeteria or food service department. Some newer schools have demonstration auditoriums with tiered seats and a demonstration area in the center with built-in sink and other mobile equipment. It is also recommended that a soundproof study or classroom be provided near the kitchen with an open window for viewing purposes, with library of reference materials; an instructor's office should also be nearby. All the related trade journals should be available.

The community college administrator considering such an occupational program should remember that the instructional costs in these programs are higher than in general education programs. A primary source of funds is the State Department of Education, Division of Vocational Education. Since the passage of the Vocational Education Act of 1963, some states have expanded their high school occupation, vocational and technical program to the community college level and this is a primary source of cooperative funding of occupational programs utilizing federal, state, and local education appropriations. The program may involve funds administered through the divisions of home economics education, trade and industry education, and distributive education. There is Federal legislation that provides training support, technical assistance, experimental demonstration research; funds for all three should be investigated. Private sources for funds are also available—trade associations, equipment manufacturers, food suppliers. Many regional and national chain and franchise organizations in the lodging and feeding industries make student scholarships available.

Program Evaluation

The community college administration must provide for continuous evaluation of the operation and development of the hospitality education program. The following points should be considered in making the evaluation:

1. The quality of the program in terms of occupational ability, skills, knowledge, and understanding of facts basic to the work to be done.
2. Availability of the program to all who have shown an interest in it.
3. The adequacy of course offerings in the hospitality industry.
4. The extent to which the program provides for student needs.
5. The effectiveness of the teaching methods.
6. The efficiency of learning either through the laboratory or on-the-job and classroom instruction.
7. The accuracy of follow-up records of all graduates.

"Guidelines for Law Enforcement Education Programs in Community and Junior Colleges," by Thompson S. Crockett and James D. Stinchomb, American Association of Junior Colleges, Washington, D.C. 1968.

This publication was developed for community or junior colleges planning or engaged in the development of occupational education curriculums in the law enforcement field. It describes some of the different types of programs that might be offered, as well as presenting the case for offering such programs in the community college.

Quoting from the report of the President's Commission on Law Enforcement and Administration of Justice and statements of the International Association of Chiefs of Police, the authors document the need for law enforcement education. The particular needs and resources of the area would determine what type of program would be offered, but it would probably include one or more of the following:

1. Development of sound associate degree programs designed to meet the long-range career needs of the police profession.
2. Identification of more limited one-year certificate programs for in-service police personnel with shorter range educational goals.
3. Provision of opportunities for in-service officers to take one or more professional courses to meet specific job objectives such as promotion or work-related background knowledge.
4. Offering of in-service training courses to provide job skills and information.
5. Coordination of regional basic or recruit training programs for the development of competencies in personnel which will enable them to function at the entry level in law enforcement agencies.

The guidelines stress the value of an advisory council, both in devising relevant programs to meet local needs and in the recruitment and placement of students. Information is given on the recruitment and selection of staff, design of a curriculum, and the preparation of facilities. A case is also made for the cadet program, a work-study arrangement where the student is given relevant work experience in coordination with his studies. Most law enforcement programs do not provide work experience as a part of the formal educational process. Usually, the student obtains employment as a clerk, typist or other civilian employment with the local police agency, but the work experience is rarely evaluated and bears little resemblance to the carefully supervised and evaluated internship periods associated with other occupational programs.

A list of resources for assistance in program development is given as well as some tips on program evaluation. Institutions offering police science degree programs are listed, as well as sources of elementary crime laboratory information, supplies and equipment.

"Effects of Field and Job-Oriented Technical Retraining on Manpower Utilization of the Unemployed," by David C. Bjorquist, The Pennsylvania State University, University Park, Pennsylvania. 1968.

This research compared two programs of preparation of technicians in mechanical technology. A *job-oriented* program emphasizing application to the specific occupation of tool design was compared with a *field-oriented* program intended to give broad basic preparation for a variety of

jobs in the field of mechanical technology. Both programs were conducted under the Manpower Development and Training Act.

Students were selected from throughout Pennsylvania by the State Employment Service which identified and initially screened each applicant. The research staff, with the cooperation of the training agencies and the employment service, developed the criteria for selection: (a) eligibility under MDTA, (b) high school graduation or equivalency, (c) familiarity with mechanics and machine operation, and (d) expressed desires to be retrained as technicians. Tests selected from the General Aptitude Test Battery were used to measure intelligence, numerical and spatial aptitudes; final selection was made by the research staff. Students were not assigned randomly to training programs, but were assigned on the basis of their personal preference for training location, 35 to the job-oriented and 40 to the field-oriented program.

The two training groups were very similar in aptitudes, years of previous education and age. With a mean of 100 and standard deviation of 20, the GATB scores for intelligence(G), numerical(N) and spatial(S) aptitudes were near one standard deviation above the means on all three measures. Approximately one-third of the students in each program had completed some education beyond high school. About one-third were teenagers at the beginning of the training. The oldest man in training was 47 and the youngest was 18.

"Tool Design Technology"

The job-oriented program was titled "Tool Design Technology." Facilities used were those of a vocational-technical school, with a program similar in many respects to the thirteenth and fourteenth years of a vocational-technical program. This curriculum was prepared with the advisement of an industrial committee in tool design. The field-oriented program, "Machine and Tool Design Technology," was offered on a two-year campus of The Pennsylvania State University, and was prepared primarily by the engineering faculty of the University, with the advice of practicing professional engineers. Each program was approximately 52 weeks in length.

Approximately one-half of the course work in each training program was in drafting and design. Other course work was in mathematics, physics and applied physics, communications, manufacturing processes and production problems. In the job-oriented program, courses other than tool design were considered to be supportive of the tool design instruction. Courses in the field-oriented program were taught more as individual subjects.

There were three dropouts from the job-oriented program and two additional students designated as drafting rather than design students. Fifteen students dropped out from the field-oriented program. Twelve of these were dropped for academic failure.

From pretraining testing to post-testing, job-oriented students showed significant gains in mathematics and mechanical comprehension. Field-oriented students made significant gains in mathematics and spatial relations. There were significant changes in the vocational interests and the social class identification of students during the period of training.

Several psychological and biographical variables were correlated with grade point average. In the job-oriented program two measures of spatial ability and a measure of mathematical ability were the best correlates. Measures of mathematical ability and mechanical comprehension correlated best in the field-oriented program.

Students generally expressed favorable attitudes toward the training they were receiving. Most students in both programs expressed their desire to work toward jobs related to their training, but more technical or with more responsibility.

Following training, data were gathered by means of interviews conducted six months, one year and two years after the completion of training.

Although many graduates reported to work immediately after training, it required an average of almost four weeks for them to begin their first job. The time required by industry for the screening and selection of individuals they hired for technical positions was often two or more weeks.

Two years after the completion of training, 28 job-oriented design graduates and 17 field-oriented graduates were employed in industry. Two job-oriented and four field-oriented graduates were in military service. There were no data for three field-oriented graduates; one field-oriented graduate was unemployed.

During each interview a job analysis was conducted to determine the job skills and work field of the graduates. The analysis technique used was one structured by the United States Bureau of Employment Security and used in the preparation of the 1965 edition of the *Dictionary of Occupational Titles*. A key focus of this type of analysis is the determination of the level at which the job requires the employee to deal with data, people, and things. In general, a hierarchy has been established in each of these three areas in which a lower code number identifies a higher level of involvement required by the job.

No Significant Differences Found

Two years after graduation 24 job-oriented and 15 field-oriented graduates were employed in the work fields of drafting and engineering. Others were employed in the work fields of researching (1), appraising (2), administering (1) and machining (2).

There were no significant differences between groups of graduates in the level of their involvement with data, people and things. There was some increase in the level of responsibility for graduates during the second year after completing training.

Ninety-three percent of the job-oriented and all of the field-oriented graduates were using some drafting skill. Three-fourths or more of the graduates of both programs were using freehand lettering, sketching, orthographic drawing, sectioning, dimensioning, and scale drawing skills.

One-half or more of the job-oriented graduates were designing tools, layouts and templates. The same was true of field-oriented graduates in designing fixtures, jigs, tools,

layout, and gauges. Ninety percent of the job-oriented and 81 percent of the field-oriented graduates were doing some designing two years after graduation.

All graduates of both programs were using some mathematics skills. Most frequently used were arithmetic, algebra, right triangle trigonometry, and plane geometry.

There were no significant differences between training groups in the satisfaction they derived from the supervision, promotion, work, pay, and people aspects of their jobs two years after graduation.

During the first year after graduation, 12 job-oriented and 13 field-oriented graduates, employed in industry, made geographic moves. During the second year, seven graduates of the two programs moved. Mobile graduates were significantly younger than immobile graduates. Mobile field-oriented graduates had significantly higher starting salaries than job-oriented graduates who moved. Immobile job-oriented graduates had significantly higher starting salaries than immobile field-oriented graduates.

Average weekly salaries for field-oriented graduates were higher than for job-oriented graduates at each of the three interviews. Two years after the completion of training, weekly salaries of graduates tended to be somewhat lower than those reported for Class B Draftsmen in metropolitan areas. Job-oriented graduates earned $120.02 per week and field-oriented graduates earned $133.20 per week two years after graduation.

Feedback From Graduates

Graduates were rated on occupational technology, manipulative work, personal and social qualities, and work qualities and habits by their employers. Most graduates of both programs were rated above average or outstanding in all but occupational technology, where they tended to be rated average.

Graduates of each program reported the utility of training courses in the jobs they held. In both programs, courses in drafting, mechanics and mathematics were rated as of much value. The machine shop and communications courses in the job-oriented program were also considered to have much value. In the field-oriented program other courses of much value were tool and die design, product design and industrial processes. As perceived by graduates of the two programs, the value of all but five courses in the two programs increased during the second year on the job.

The social class identification scale which had been administered before and after training, was used again two years after graduation. Scores for graduates of both programs had decreased during the two years after training and were not significantly different from scores before training.

Significant gains were made by both training groups, as measured by standardized tests. However, it was concluded that the students of lesser ability achieved more in the job-oriented program than they did in the field-oriented program. Predictors of success in training were different for each program and should be developed by institutions offering technical programs.

Graduates of the programs were employable as technicians after a relatively short intensive period of training. Shortened training periods for the preparation of technicians should be considered in fields with high demand for workers.

Although the curricular content of the two training programs appeared similar, there were differences in the execution of the programs. These differences seemed to result from the more specifically defined occupational objective of the job-oriented program as opposed to the rather general occupational objective of the field-oriented program.

The job-oriented program produced more graduates, in part, because it was more flexible. Students whose training performance did not measure up in every respect were allowed to continue training. Despite this flexible standard, the on-the-job performance level of the job-oriented graduates was comparable to that of the field-oriented graduates.

Credit for Training Recommended

It was recommended that credit be given for training in similar programs. This would have been helpful to students, several of whom aspired to jobs which might require additional preparation.

The training situation in the job-oriented program bore greater similarity to the employment situation than did the field-oriented program. When the similarity of training and work are greater the transition to the job after training should be easier.

There were difficulties in the placement process of graduates of the training programs. Lines of communication between these technical programs and the employers of technicians did not appear to be well developed. Effort should be expended in seeking out prospective employers and informing them of the availability of graduates.

The follow-up procedures used in this study could be further refined to produce more specific information for curriculum and evaluation purposes. Job titles held by graduates would not have provided accurate indicators of job responsibilities. Follow-up data should be accurate and additional work on the methodology of gathering these data is needed.

"Selected Characteristics, Socioeconomic Status, and Levels of Attainment of Students in Public Junior College Occupation-Centered Education" by John W. Hakanson, University of California, Berkeley. 1967.

The objectives of this study are: (a) To describe and compare those students completing a two-year occupation-centered curriculum with those enrolling, but not completing the curriculum, in terms of socioeconomic status, scholastic aptitude, course of study followed in high school, and sex; to determine if the relationship between low socioeconomic status and low educational attainment remains firm when completion of a two-year occupation-centered curriculum in a public junior college is the criterion of achievement; (b) to compare students enrolling in such a curriculum directly from high school with those who

initially enroll in a college credit transfer program and then later change over to such a curriculum; (c) to observe variations in shifting from a college transfer curriculum to the occupation-centered curriculum according to levels of socioeconomic status; and (d) to compare the socioeconomic status of public junior college students in occupation-centered curricula with whether or not they complete the curricula.

Methodology Employed in Study

Data obtained from the "High School Graduate Study" of Medsker and Trent are used in this study; those data include general intellectual, psychological and social characteristics of approximately 10,000 high school graduates and factors influencing attendance and persistence in college. The six institutions observed in the research for the subject study are broadly representative of public junior colleges in California and the Midwest. Data used are those pertaining to a basic group of 1,011 students whose first full-time enrollment in post-secondary education was in the fall of 1959, and whose educational progress was followed for four years. Data relating to the personal and social characteristics and educational background of the students were collected by questionnaire in 1959; further data were obtained from records of performance and retention in post-secondary education and employment. (Transcripts are available on those of the original 10,000 who attended a post-secondary institution listed in the *Education Directory* of the U.S. Office of Education.)

The following specific terminology is defined by the author: "Two-year occupation-centered curricula or terminal programs) are programs for two years or four semesters whose objective is the preparation of the students for definite occupations." "Completion of a two year occupation-centered curriculum" means that the student has either received an A.A. degree or Certificate of Completion or earned 59 or more semester hours of credit (with a substantial portion being part of a two-year occupation-centered curriculum).

Determination of Socioeconomic Status

Socioeconomic status was determined by father's occupation, the occupations being broadly categorized at three levels (High, Middle, and Low) implying educational skill and responsibility differences. Scholastic aptitude was measured by direct or converted scores on the Scholastic Aptitude Test (SCAT). Means and ranges were computed from scores earned by the 1,011 students in the basic group; determination of High, Medium, and Low categories of students was obtained in the original 10,000 group of students. Three basic high school programs were used in classifying the students: (a) Occupational–vocationally oriented program in agriculture, industrial arts, business, commercial, secretarial, (b) general, (c) college preparatory.

Three subgroups were identified: (a) Students who had initially enrolled in a curriculum intended for later transfer to a four-year college, including some who later changed to a terminal curriculum; (b) students who had enrolled directly in a terminal program from high school and did not transfer to another program, omitting students who had initially enrolled in the two-year occupation-centered curricula who subsequently changed to transfer curricula; and (c) students from subgroups (1) and (2) who, after four years, had either completed or not completed the two-year occupation-centered curricula.

Summary of Results

The first objective of this study being to describe the students in terms of specific characteristics, the basic method of analysis used was to make a series of comparisons of groups of students, each in terms of one of a number of selected variables testing each comparison for significance; the analysis took the form of testing a specific variation of the general null hypothesis that there were no significant differences between the groups being compared.

There was a total of 319 students from the basic study group which spent some time in the occupation-centered curricula during the period covered by Hakanson. Of the terminal students, 90 percent were from middle and low socioeconomic status homes; women of middle socioeconomic status and men of low socioeconomic status were "over-represented" as compared to their peers among graduating high school seniors. These students earned medium and low scholastic aptitude test scores in the medium range; women of medium scholastic aptitude and men of low scholastic aptitude were over-represented as compared to their peers. Terminal students had taken occupational courses of study in secondary school in greater proportion than their colleagues, and this tendency was stronger for women than men.

Forty percent of the terminal students completed the occupation-centered curriculum. Analysis revealed that within the medium scholastic aptitude category those students with middle socioeconomic status were more likely to complete the curriculum than those with high or low socioeconomic status. Because only one out of every seven who dropped out of a college credit transfer program ever shifted to the occupation-centered program, analysis was limited in this part of the study. Hakanson found no conclusive relationship between the socioeconomic status of a student and enrollment in a terminal program. No difference in scholastic aptitude was shown to exist between those students who enrolled in the curriculum directly from high school and those who enrolled in it after trying a college credit transfer program. The data indicated, especially for women, a strong relationship between taking an occupational course in secondary school and enrolling directly from high school in a terminal program.

Conclusions and Recommendations

Since Hakanson's study infers that low and, especially, middle socioeconomic status students are more likely than high socioeconomic status students to complete the occupation-centered curricula, he suggests that major research be conducted to identify elements of "socioeconomic status" which appear to have a definite relationship with whether or not a student finishes a given educational program. Re-

search is also indicated to determine if, as this study infers, there are different relationships between socioeconomic status and completion of an occupation-centered curriculum for students above, or below, a specific level of scholastic aptitude. Knowledge of such factors might lessen the reliance upon grades and scholastic aptitude test scores; of educational programs with greater understanding of the relationships between socioeconomic status and achievement in different educational programs, direction could be given to a reasoned restructuring of education with greater emphasis on occupation-centered education.

Hakanson observed that, since only 14 percent of those students withdrawing from a college credit transfer program subsequently enrolled in an occupation-centered curriculum during the period covered in the study, the junior college may fail to meet society's need for technicians unless it can (a) attract more high school graduates directly into the occupation-centered curricula, or (b) get the academic program dropouts to switch to terminal programs rather than withdraw from school. Also, he remarked that unless the junior college can guide its students in courses of study in which they will be successful, the community may well blame the institution for the failure of the students, thus possibly posing grave problems for those which depend upon the community for revenue.

The junior college counseling effort should be focused on male students with medium scholastic aptitude and middle-socioeconomic status, as this study has inferred that such students are likely to complete the occupation-centered curriculum once entered in it.

Hakanson also infers that if high schools would offer more occupational courses, especially those appropriate for boys, and give more effective educational guidance, larger numbers of young men might pursue these courses in high school and subsequently more might enroll directly and complete the terminal curricula in public junior colleges.

Hakanson concluded: "Verification of the likelihood that under certain circumstances this relationship (between socioeconomic status and level of attainment in education) will vary with the kind of education undertaken by the individual constitutes a refinement of the general theory that the lower the socioeconomic status of the individual the more likely it is that his educational attainments will also be low."

PLAIN TALK

THE OVERRIDING PURPOSE of *Research Visibility* is very simple—the straight-forward reporting and communication of the results of research, study, institutes and demonstrations to our consumers in the professional field of vocational and technical education. The current word for the process is "dissemination." Obviously, one of our most severe limitations of dissemination in RV is our confinement to the medium of the printed page. It is interesting to speculate upon the many benefits which could accrue to vocational and technical education if we could utilize numerous media of dissemination to make "plain talk" about research and development zero-in on our many problems.

Surely, the oft-quoted "one picture is worth a thousand words," has a lesson for us to learn in research reporting and dissemination. Somehow our investigators, researchers and scholars of the research and study process have not taken very seriously the challenge of provoking real learning through the dissemination of research reports which employ other than the traditional paper-and-ink medium. Historically, at least before the advent of heavy research funding, graduate study and research usually found its way to the graceful repose of library shelves until disturbed by another researcher or student of investigation. How much of our contemporary research and study is destined for a similar morgue of disuse?

"Slack-Time" and Use of Research Results

Current devotees of the PERT (Performance Evaluation and Review Technique) System are very familiar with *slack time*. The term indicates a place or places in research or in the conduct of a program in which progress is *behind* schedule (negative slack time) or *ahead* of schedule (positive slack time). The *slack time* idea, particularly the negative variety, should be of great concern to all of our personnel whether engaged in the conduct of research, teaching a course, erecting a new vocational facility, or engaged in any enterprise which would be characterized by efficiency and good organization to accomplish results. Particularly to researchers and to those who are dependent upon previous or on-going research or new knowledge from other researchers, negative slack time is costly—sometimes embarrassing and disastrous.

It is the purpose of most modern information retrieval and documentation systems to eliminate particularly the negative slack time caused by some very natural and important questions: What has been already found out about the subject under investigation? Who are the chief investigators of a similar interest? What related studies have been made? What conclusions and recommendations have come out of previous study? Are there similar studies in other fields (other disciplines), agencies (departments of the government), business and industry? Specifically, *where* (from what source(s)), at what cost, and what length of time is needed to obtain reports and materials?

Research Visibility as a dissemination project has a vested interest in slack time of the nature described above in addition to providing JOURNAL readers with the latest information which is possible to procure. Moreover, it is concerned with the timely availability of research and development reports and the lag which sometimes exists between the time of investigator reporting and access to

the report by *RV* staff and personnel in the field. Reduced to their most simple terms, the problems of access and retrieval in the midst of the explosion of knowledge in which we find ourselves, despite all of the devices (documentation centers, information systems, etc.) which are presently available, is a spirit of "bird-dogging" of critical value to all of us.

RV will continue to commit this spirit to its reporting as a major purpose of its operation. In addition to the concentrated use and helpful cooperation of the ERIC Clearinghouse in vocational and technical education at Ohio State University, *RV* will initiate and maintain strong contact with other documentation centers in government and elsewhere. In this connection the attention of JOURNAL readership is invited to the fine print at the end of the *RV* section for other sources of information. Subject to space limitations and the availability of descriptions of the documentation centers, *RV* will report, from time to time, any new progress in this direction.

. . . *and Don't Forget Evaluation*

If there is a theme and persistent thread to new and impending professional needs and legislation, it is *evaluation*. This fact does not mean the use of new quickie devices for the total appraisal process in connection with the *quantity* and *quality* aspects of vocational programs at all levels. It is the overall task of all professionals and affiliates of the program. As Federal funding approaches the three-quarter billion dollar figure, the assessment, justification, and documentation of on-going programs and new needs will be demanded by members of Congress. Historic attempts at appraisal of the total vocational program have lacked the evidence of objectivity which is now required. The correction and alleviation of the evaluation problem is solely a task for the profession itself in disciplining its efforts to achieve the quality and quantity which it demands for its benefactors.

Advisory councils on the state and national levels will be confronted with obligations to assess vocational and technical education programs of their affiliations. This fact is crystal clear in the design, spirit and letter of the new legislation. It is also not by accident that contemporary vocational education legislation means to make the evaluation commitment stick as it provides funds for the *operation* of national and state advisory councils to, among many designated functions, conduct program appraisals and make duplication studies. Admittedly, the requirement is long overdue, and partially at least, it may be the reaction of Congress as a suggestion to the profession to police its own ranks. The evident process of gradual deterioration and thinning of ranks of professional vocational educators in the U.S. Office of Education is not without its relationship to the new challenge as we are reminded of the historic purposes of USOE and its establishment.

The American Vocational Association as the total professional organization of vocational educators has accepted its role as the vehicle through which the profession can move and become effective. This fact does not mean that the AVA is the evaluator or the "accreditor." It does mean that the professional organization can muster the personnel from the field with competency to concentrate on the formulation of desirable and realistic standards and criteria with vitality. Field experts from the many ranks of vocational and technical education can establish both the benchmarks of quality programs at all levels and a workable process which will enable the criteria to be moved through the assessment operation. At best, the evaluation process in vocational and technical education is a tremendously complex problem as it should take place in connection with programs which make up the wide scope of the total program. Optimistically, vocational education professionals are up to the task. Their leadership will not be found lacking.

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CFSTI—Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151. Copies of reports with this symbol may be purchased for $3 each (paper) or 65 cents (microfiche). Send remittance with order directly to the Clearinghouse and specify the accession number (AD or PB plus a 6-digit number) given in the listing.

ERIC—Educational Resources Information Center, EDRS, c/o NCR Co., 4936 Fairmont Ave., Bethesda, Maryland 20014. Copies are priced according to the number of pages. The MF price in the listing is for microfiche; the HC price is for paper copies. Send remittance with order directly to ERIC-EDRS and specify the accession number (ED plus a 6-digit number) given in the listing. *How to Use ERIC*, a recent brochure prepared by the Office of Education, is available from the Superintendent of Documents, Government Printing Office, Washington, D. C. 20402; the catalog number is FS 5.212.12037; price: 20 cents.

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MA—Manpower Administration. Single copies free upon request to U.S. Department of Labor, Manpower Administration, Associate Manpower Administrator, Washington, D. C. 20210

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